

4. Status of amendments

No amendments were filed subsequent to the final rejection.

5. Summary of Invention

The claims as presently pending were amended in an amendment dated July 31, 2001.

The present invention relates to a draft gear cushioning assembly for use in a railway freight car draft sill-coupler assembly.

In the detailed description of the invention, like reference numbers are used for like parts. Certain reference numbers are followed by F for an F shank coupler, E for an E shank coupler and R for a rotary coupler (See page 10, lines 1-7).

Independent claim 1 can be summarized as follows.

Claim 1

A draft gear assembly for use with railcars having coupler members, the draft gear assembly (10F, 10E or 10R) having front (2) and back (4) ends and comprising: (See Figs. 1 and 11, lines 8-14 of page 10);

a yoke (24F, 24E or 24R) having a back wall (44), a top wall (40) extending from the back wall toward the front end of the draft gear assembly, and a bottom wall (42) extending from the back wall towards the front end (2) the draft gear assembly; (See Figs. 7, 17 and 21, and lines 24-30 of page 11);

a coupler follower (26F, 26E or 26R) positioned between the back wall (44) of the yoke and the front end of the draft gear assembly; (See Fig. 8, lines 19-21 of page 14);

at least one front resilient member (28) positioned between the coupler follower (26F, 26E or 26R) and the back wall (44) of the yoke; (See Figs. 1 and 11 and lines 13-19 of page 11 and lines 21-23 of page 15);

at least one back resilient member (30) positioned between the yoke back wall (44) and the back end of the draft gear assembly; (See Figs. 1 and 11 and lines 13-19 of page 11 and lines 20-21 of page 15);

the front and back resilient members being compressible; (lines 14-16 of page 17);

a rear follower (32) positioned rearward of the back resilient member (See Figs. 1 and 11 and lines 13-19 of page 11);

a draft sill (12) having front stops (14), the coupler follower (26F, 26E or 26R) including a pair of stop contact surfaces (72) for contact with the draft sill front stops and a coupler bearing surface (74) between the stop contact surfaces, at least a part of the coupler bearing surface being forward of the stop contact surfaces of the coupler follower. (See Figs. 1, 8 and 11 and line 26, page 14 to line 13 of page 15, lines 21-24 of page 21 and now cancelled claim 3).

Claim 2

The draft gear assembly of claim 1 wherein the yoke (24F, 24E or 24R) has a neutral position (Figs. 3 and 4) a full draft position 1-1/4 inches forward of the neutral position (Fig. 1) and a full buff position 3 inches rearward of the neutral position (Fig. 2). (See lines 3-11 of page 22 and line 29 of page 22 to line 3 of page 23).

Claim 4

The draft gear assembly of claim 1 in combination with a draft sill (12) having front stops (14), rear stops (16) and a draft pocket (18) between the front stops and the rear stops and wherein:

the rear follower (32) is positioned against the rear stops throughout buff and draft movement of the coupler follower (26F, 26E and 26R); and

the coupler follower is positioned against the front stops at the neutral position. (See Fig. 4 and lines 27-31 of page 20).

Claim 5

The combination draft gear assembly and draft sill of claim 4 wherein the draft pocket (18) has a length of about 24-5/8 inches. (See Fig. 1 and lines 26-29, page 19).

Claim 6

The draft gear assembly of claim 1 in combination with a draft sill having walls defining a draft pocket (18), wherein at least the front (28) and back (30) resilient members are received in the draft gear pocket, and wherein the combination is free from any housing between the draft sill walls and the front and back resilient members. (See lines 20-23, page 11).

Claim 7

The draft gear assembly of claim 1 further including a center rod (34) extending from the rear follower (32) through the back resilient member (30) and through the back wall of the yoke, (24F, 24E or 24R);

wherein prior to installation on the railcar the yoke, coupler follower, front resilient member (28), rear follower and center rod comprise an assembly, the assembly further including a shortening member (36) on the center rod at the rear follower, the length of the assembly from the coupler follower to the rear follower being less than 24-5/8 inches (See lines 17-29 of page 19);

wherein the yoke has a buff stroke; and wherein after installation on the railcar the center rod is free from tension when the yoke is moving through the draft stroke and free from compression when the yoke is moving through the buff stroke (See Fig. 1 and lines 13-19 of page 11 and lines 15-22 of page 24).

Claim 9

A draft gear assembly for use with a railcar having a coupler member and a draft sill (12) with front (14) and rear (16) stops defining a draft gear pocket (18) to receive at least part of the draft gear assembly (10F, 10E or 10R), the draft gear pocket having a length between the front stops and rear stops, the draft gear assembly having front (2) and back (4) ends and comprising (See Figs. 1 and 11 and lines 20-25 of page 10):

a yoke (24F, 24E or 24R) having a back wall (44), a top wall (40) extending from the back wall toward the front end of the draft gear assembly, and a bottom wall (42) extending from the back wall toward the front end of the draft gear assembly (See Figs. 7, 17 and 21 and lines 24-30 of page 11);

a coupler follower (26F, 26E or 26R) positioned between the back wall (44) of the yoke and the front end of the draft gear assembly, the coupler follower having a generally vertical, indented forward facing stop surfaces (72) (See Figs. 2 and 8 and line 26, page 14 to line 13 of page 15 and lines 21-24 of page 21);

at least one front resilient member (28) positioned between the coupler follower (26F, 26E or 26R) and the back wall (44) of the yoke (See Figs. 1 and 11 and lines 13-19 of page 11 and lines 21-23 of page 15);

at least one back resilient member (30) positioned between the yoke back wall (44) and the back end of the draft gear assembly (See Figs. 1 and 11 and lines 13-19 of page 11 and lines 20-21 of page 15);

a rear follower (32) positioned rearward of the back resilient member (30), the rear follower having a rearward facing stop surface (86) (See Figs. 1, 6 and 11 and lines 13-19 of page 11 and lines 14-18 of page 15);

a center rod (34) extending through the rear follower, through the back resilient member and through the back wall of the yoke (See Fig. 1 and lines 17-29 of page 19);

wherein prior to installation on the railcar the yoke, coupler follower, front resilient member, back resilient member, rear follower and center rod comprise an assembly, the assembly further including a shortening member (36) on the center rod (34) at the rear follower, the length of the assembly between the stop surface of the coupler follower and the stop surface of the rear follower being less than the length of the draft gear pocket (See lines 17-29 of page 19);

wherein after installation the rear follower (32) is positioned against the rear stops (16); and

wherein after installation the yoke has a neutral position, a full draft position forward of the neutral position, and a full buff position rearward of the neutral position;

the center rod (34) being free from tension when the coupler member is in the full draft position;

the center rod being free from tension and compression when the coupler member is in the neutral position; and

the center rod being free from compression when the coupler member is in the full buff position (See Figs. 1-4 and lines 15-22 of page 24).

Claim 10

The draft gear assembly of claim 9 wherein the shortening member (36) comprises a nut (37) on the end of the center rod (34) and a removable gag (38) inward of the nut (See Fig. 6 and lines 17-29 of page 19).

Claim 11

The draft gear assembly of claim 9 wherein the distance between the stop surface of the rear follower (32) and the stop surface of the coupler follower (26F, 26E or 26R) is less than 24-5/8 inches prior to installation of the assembly on the railcar (See line 17-29 of page 19).

Claim 12

The draft gear assembly of claim 11 wherein the yoke (24F, 24E or 24R) includes top stops (45) and bottom stops (47) limiting forward movement of the coupler follower (See Fig. 7 and lines 1-9 of page 12).

Claim 13

The draft gear assembly of claim 9 in combination with a draft sill (12) having walls defining a draft pocket (18), wherein at least the front (28) and back (30) resilient members are received in the draft gear pocket, and wherein the combination is free from any housing between the draft sill walls and the front and back resilient members (See Fig. 1 and lines 20-25 of page 10 and lines 20-23 of page 11).

Claim 14

The combination draft gear assembly and draft sill of claim 13 in combination with a coupler, the coupler having a draft stroke of 1-1/4 inches and a buff stroke of at least 4-1/4 inches (See lines 3-5 page 22 and lines 1-2 of page 23).

Claim 15

The combination draft gear assembly and draft sill of claim 13 wherein the coupler follower (26F, 26E or 26R) includes a coupler bearing surface (74) forward of the stop surface (72) of the coupler follower (See Fig. 8 and lines 27-29 of page 14 and lines 21-24 of page 21).

Claim 16

The combination draft gear assembly and draft sill of claim 13 wherein the length of the back resilient member (30) is greater after installation in the draft sill than prior to installation (See lines 25-26 of page 19 and lines 25-27 of page 20).

Claim 17

A draft gear assembly for use with a railcar having a coupler member and a draft sill (12), the draft gear assembly having front (2) and back (4) ends and comprising (See Fig. 1 and 11 and lines 20-25 of page 10):

a yoke (24F, 24E or 24R) having a back wall (44), a top wall (40) extending from the back wall toward the front end of the draft gear assembly, a bottom wall (42) extending from the back wall toward the front end of the draft gear assembly, and a yoke stop (45, 47) (See Figs. 7, 17 and 21 and lines 24-30 of page 11 and lines 1-9 of page 12);

a draft sill (12) having front stops (14) (See lines 20-28 of page 10);

a coupler follower (26F, 26E or 26R) forward of the back wall (44) of the yoke and having a forward facing surface positioned against the yoke stop; said coupler follower including a pair of stop contact surfaces (72) for contact with the draft sill front stops (14) and a coupler bearing surface (74) between the stop contact surfaces, at least part of the coupler bearing surface being forward of the stop contact surfaces of the coupler follower (See Figs. 1, 8, 11 and line 26, page 14 to line 13, page 15 and lines 21-24 of page 21);

at least one front resilient member (28) positioned between the coupler follower and the back wall of the yoke (See Fig. 1 and 11 and lines 13-19 of page 11 and lines 21-23 of page 15);

at least one back resilient member (30) positioned between the yoke back wall and the back end of the draft gear assembly (See Figs. 1 and 11 and lines 13-19 of page 11 and lines 20-21 of page 15);

a rear follower (32) positioned rearward of the back resilient member (30), the rear follower having a rearward facing stop surface (86) (See Fig. 1 and lines 17-29 of page 19);

a center rod (34) extending through the rear follower (32), through the back resilient member and through the back wall of the yoke (See Fig. 1 and lines 17-29 of page 19); and

a shortening member (36) on the center rod at the rear follower (See lines 17-29 of page 19).

Claim 18

The draft gear assembly of claim 17 wherein the shortening member (36) comprises a nut (37) on the end of the center rod (34) and a removable gag (38) inward of the nut (See Fig. 6 and lines 17-29 of page 19).

Claim 19

The draft gear assembly of claim 17 wherein the yoke (26F, 26E or 26R) includes a plurality of stops (45, 47) bearing against the coupler follower (See Fig. 7 and lines 1-9 of page 12).

Claim 20

The draft gear assembly of claim 17 wherein the front (28) and back (30) resilient members provide a force damping function (See lines 10-22 of page 18).

Claim 21

In combination, a draft gear assembly, a coupler and a draft sill, the draft sill (12) having a pair of front stops (14) and a pair of rear stops (16);

the draft gear assembly having front (2) and back (4) ends and comprising:

a yoke (24F, 24E or 24R) having a back wall (44), a top wall (40) extending from the back wall toward the front end of the draft gear assembly, and a bottom wall (42) extending from the back wall toward the front end of the draft gear assembly, the yoke having a buff stroke from a neutral position to a full buff position and a draft stroke from the neutral position to a full draft position (See Figs. 1, 7, 11, 17 and 21 and lines 20-25 of page 10 and lines 24-30 of page 11);

the back wall of the yoke being between the front stops and rear stops of the draft sill;

a coupler follower (26F, 26E or 26R) positioned between the back wall of the yoke and the front stops (14) of the draft sill, the coupler follower having generally vertical, indented forward facing stop surfaces (72) and having a buff stroke from the neutral position to a full buff position (See Figs. 1, 8 and 11 and line 26 of page 14 to line 13 of page 15 and lines 21-24 of page 21);

a rear follower (32) positioned against the rear stops of the draft sill, the yoke back wall (44) being longitudinally spaced from the rear follower (See Fig. 1 and lines 17-29 of page 19);

at least one front resilient member (28) between the coupler follower and the back wall of the yoke;

at least one back resilient member (30) between the rear follower and the back wall of the yoke (See Figs. 1 and 11 and lines 13-19 of page 11 and lines 20-21 of page 15);

a coupler (22F or 22E) extending forward from the yoke, the coupler having a neutral position, a draft stroke from the neutral position to a full draft position forward of the neutral position and a buff stroke from the neutral position to a full buff position back from the neutral position;

the coupler and yoke draft stroke being such that the distance between the front face (66) of the yoke back wall and the coupler follower decreases from the neutral spacing when the coupler is in the full draft position and the distance between the rear face (67) of the yoke back wall and the rear follower increases from the neutral spacing when the coupler is in the full draft position (See Fig. 1 and lines 3-16 of page 22);

the coupler, yoke and coupler follower buff stroke being such that the distance between the front face of the yoke back wall and the coupler follower decreases from the neutral spacing when the coupler is in the full buff position and the distance between the rear face of the yoke back wall and the rear follower decreases from the neutral spacing when the coupler is in the full buff position (See Fig. 2 and lines 20-31 of page 22 and lines 1-6 of page 23).

Claim 22

The combination of claim 21 wherein the coupler follower is stationary when the coupler moves in draft and wherein the coupler follower has a buff stroke of 4-1/4 inches (See lines 1-27 of page 23).

Claim 23

The combination of claim 21 wherein the yoke has a draft stroke of 1-1/4 inches and a buff stroke of 3 inches (See lines 2-6 of page 22 and lines 1-3 page 23).

Claim 24

The combination of claim 21 further including a center rod (34) extending through the rear follower, through the back resilient member and through the back wall of the yoke,

wherein the yoke, coupler follower, front resilient member, rear follower and center rod comprise an assembly prior to installation, the assembly further including a shortening member (36) on the center rod at the rear follower, the length of the assembly from the coupler follower to the rear follower being less than 24-5/8 inches (See lines 28-29 of page 19);

and wherein after installation the center rod is free from tension when the coupler moves through the draft stroke and free from compression when the coupler moves through the buff stroke (See Figs. 1-4 and lines 15-22 of page 24).

6. Issues

The following issues are presented for review.

For claims 1-2 and 4-8, whether these claims as amended and presently pending, are unpatentable under 35 USC 103(a) over Kaufhold et al. in view of Winther.

For claims 9-24, whether these claims as amended and presently pending, are unpatentable under 35 USC 103(a) in view of Winther and obvious design choice.

Further, for claims 1-2 and 4-24, whether these claims as amended and presently pending are unpatentable under 35 USC 103 (a) in view of Kaufhold et al. with regard to the limitation of "at least part of the coupler bearing surface being forward of the stop contact surfaces of the coupler follower."

7. Grouping of Claims

It is the Applicant's position that there are four groups of claims presently under appeal. These groups are claims 1-2 and 4-8, claims 9-16, claims 17-20 and claims 21-24.

8.

Claims 1-2 and 4-24 are under appeal. All have been rejected as unpatentable in the final rejection of August 27, 2001 under 35 USC 103(a) over Kaufhold et al in view of Winther.

In simplified language, claim 1 sets forth a draft gear assembly comprising a yoke (24F, 24E or 24R) a coupler follower (26F, 26E or 26R), a front resilient member (28) between the coupler follower and the back wall (44) and the yoke, a back resilient member (30) between the back wall of the yoke and the back end of the draft gear,

a draft sill having front stops (14), the coupler follower including a pair of stop contact surfaces (72) for contact with the draft sill front stops and a coupler bearing surface (74) between the stop contact surfaces, "at least a part of the coupler bearing surface being forward of the stop contact surfaces of the coupler follower."

Claim 17 sets forth a similar structure with a similar arrangement of stop contact surfaces, again with "at least part of the coupler bearing surface being forward of the stop contact surfaces of the coupler follower."

In simplified language, claim 9 sets forth a draft gear assembly comprising a yoke (24F, 24E or 24R) having a back wall (44), a coupler follower (26F, 26E or 26R) having a "generally vertical, indented forward facing stop surfaces" (72),

one front resilient member (28) between the coupler follower and the back wall of the yoke,

and one back resilient member (30) between the yoke back wall and the back end of the draft gear assembly.

Claim 21 sets forth a similar structure with a similar arrangement of a yoke, and a coupler follower "having generally vertical, indented forward facing stop surfaces" (72), with front and back resilient members.

The rejection of claims 1-2 and 4-8 under 35 USC 103 (a) over Kaufhold et al. in view of Winther is not readily understood. The Examiner essentially repeats the prior non-final rejection and fails to take into account that the buff stroke of 4-1/4 inches or less and the draft stroke of 1-1/4 inches was deleted from claim 1 upon amendment in reply to the non-final rejection.

Similarly, the rejection of claims 9-24 over Winther is not readily understood. Again, the said to be obvious modification to Winther of a buff stroke of 4-1/4 inches or less and the draft stroke of 1-1/4 inches was deleted by amendment from claim 21, and never was present in claim 9 or 17.

A review of the disclosure of Kaufhold et al. and Winther appears in order.

U.S. Patent No. 2,876,911 - Winther discloses a yoke and follower for use in a train cushion draft gear and coupler. A yoke 1 extends in a draft gear pocket; yoke 1

contains a front cushion 18 between its rear wall 16 and extending between yoke arms 17 and the rear face 27 of follower 23. Rear cushion 20 of the draft gear is fit between rear wall 16 of yoke 1 and rear follower 21, which reacts against rear stop lugs 22. Front follower 23 has legs 24 that extend forwardly from front face 28 to engage stop lugs 25.

U. S. Patent No. 5,312,007 - Kaufhold et al. discloses a draft gear pocket casting 36 with upper and lower walls 52, 56. Rear wall 60 has an aperture 62. Rod 134 has an end that extends through opening 62 in pocket casting rear wall 60 and through draft gear 120 segments 122 having a passage 132 therethrough. Nut 138 is screwed on bolt end 140 which can place a compressive load on elastomeric elements 122.

Winther discloses a front follower 23 with legs 24 that extend outwardly to engage stop lugs 25. Claims 1 and 17 of the present case as amended set forth that at least part of the coupler bearing surface of the coupler follower extends forwardly of the stop contact surfaces of the coupler follower. This is the surface 74 that engages the end of the coupler shank. Claims 9 and 21 as amended set for the a coupler follower having generally vertical forward facing indented stop surfaces. These are the elongated surfaces 72. Such features of the coupler follower of the present invention are structural differences from the coupler follower of Winter that actually has legs 24 that extend outwardly from front follower 23. The forward facing indented stop surfaces of the coupler follower or the coupler bearing surface of the coupler follower extending forwardly of the stop contact surfaces allow the draft gear assembly of the present invention to, under buff loads, compress both the front cushion and the rear cushion due to the extra travel of the follower to thereby combine the cushioning capacity of both the front and back resilient members. This is an improved function from the draft gear assembly of Winther.

Further, with regard to amended claim 9 of the present application, certain features of the center rod are set for that are not disclosed in Kaufhold et al. The center rod is said to be free from tension in full draft, free from tension and compression in

neutral, and free from compression in full buff. These features amount to features not disclosed nor obvious from Winter in view of Kaufhold.

With regard to amended claim 21, certain features of the coupler and yoke draft strokes are not disclosed in nor obvious from Winter nor Kaufhold. The coupler and yoke draft strokes being such that the distance between the front face of the yoke back wall and the coupler follower decreases from neutral to full draft, and the distance from the rear face of the yoke back wall and rear follower increases from neutral to full draft are not disclosed in nor obvious from the references.

The Examiner states that it is a weak argument to have amended claims 1 and 17 such that at least part of the coupler bearing surface on the coupler follower is forward of the stop contact surfaces of the coupler follower because Kaufhold et al. meets this limitation fully. Kaufhold et al. discloses a coupler pocket casting 36 that has integral front surfaces 72, 74. Pocket casting 36 of Kaufhold et al. acts as both a yoke and coupler follower. However, note that front surfaces 72, 74 are flat and engage lips 80, 82 of front stops 84, 86, respectively. Front surfaces 72, 74 do not have indented sections such as set forth in claims 9 and 21 of the present application, nor do they have any portion of the coupler bearing surface forward of the stop contact surfaces as set forth in claims 1 and 17 of the present application.

In fact, follower 92 of Kaufhold et al. has a forward surface 96 for mating with the convex surface of the coupler end. However, follower 92 of Kaufhold et al. does not even engage the outer sill wall recessed front stops 84, 86 with protruding lips 80, 82. Such limitation on forward movement in draft is provided by the contact with pocket casting 36 front surfaces 72 and 74 with lips 80 and 82 of the front stops 84 and 86.

It is not understood nor believed supportable how the Examiner can state that "Applicant's argument regarding the limitation of 'at least part of the coupler bearing surface being forward of the stop contact surfaces of the coupler follower' is weak to overcome the rejections as Kaufhold et al. meets this limitation fully" when a careful

review of Kaufhold et al. reveals the significant structural differences between the presently claimed coupler follower as discussed above.

Further, the structural arrangement of the coupler follower in having indented, forward facing stop surfaces (present claims 9 and 21) or in having at least a part of the coupler bearing surface forward of the stop contact surfaces of the coupler follower (present claims 1 and 17) allow further travel of the coupler in draft a distance corresponding to this offset. This amounts to a functional difference between the presently claimed invention of the disclosure of Kaufhold et al. Such draft travel will not be possible without the offset contact surfaces.

9. Appendix


A copy of claims 1-2 and 4-24, currently under appeal, follows. (Use amended claims 1, 9, 17, 21 and 24 and other claims as filed).

Reversal of the final rejection and allowance of the claims as appealed is respectfully requested.

Respectfully submitted,

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